

M/045/6A78  
cc: Leslie  
Incoming

Date: April 12, 2011

To: Oren/Leslie  
From: Rick Havenstrite  
Subject: Closure

Major issues concerning closure:

- 1) Arid conditions-- Evaporation exceeds precipitation by at least 40 inches.
- 2) Regional Geology-- The entire project area is underlain by large regional alkaline granite plutons with only localized fracturing and no known shallow water table.
- 3) Regional Hydrology-- There is no known potable water in the district. All known ground water is Class 3 water with typical 3500 ppm TDS and 7.6 pH. Typically the water is very high in magnesium, potassium, sodium, and calcium. The DEQ has issued the GWD permit on the basis of low project risk due to local hydrology. There are no streams, springs, or lakes near the project area.
- 4) Geography-- The project is located approximately 5 miles west and 1500 feet above the Hill Air Force Base and Great Salt Lake Flats. The Project is hidden in a small valley 2 miles from the nearest county road. It has very poor public access and will be visible from any direction for less than a mile. The project does not block or affect public access.
- 5) Ore geology-- The ore, prior to and after leaching is highly basic and highly acid consuming. We have encountered no acid producing rocks in the Clifton or Kiewit Zones. Approximately 95% of all ore leached will come from the Kiewit ore body which has demonstrated strongly basic conditions. 5% of the ore will come from the Clifton Shears which average approximately .14% sulfur based on 48 samples taken by Dumont Nickel (see ore characterization).
- 6) Wildlife-- Is sparse due to the arid/desert conditions, and lack of surface water.
- 7) Leach Chemistry-- During operations, lime will be added as a pH modifier as well as sodium cyanide for leaching the gold and silver. We anticipate the pH of the spent pad will be approximately 9-9.5. We expect leach make-up water to match regional conditions with high TDS in the range of 3500 ppm. Regionally, primary dissolved solids are magnesium, sodium, and calcium. The pH of the make-up water should be approximately 7.6.

At the end of leaching:



1) Returning solutions from the pad will be evaporated in the pond area using existing pumps and high evaporation emitters. As flows decrease, smaller pumps and generators will be used.

We anticipate the evaporation will take 765 days. Though we believe return flows will be negligible, we will plan that they could be as high as 5 gpm thereafter.

2) During evaporation. All pad and pond liners will remain intact. With the State's permission, pad re-grading, re-topsoiling, and re-vegetation will commence in the pad area. An emphasis will be made to divert surface water off of the contained area without creating undo erosion-- thereby reducing water infiltration on the pad and subsequent discharge.

3) Once evaporation is nearing completion, we will present a plan to the State based on the quantity and quality of the effluent. It would be our plan to leave the majority of the pond liner in tact as a long term evaporation containment until water seizes completely for a period of at least 1 year. The pond will evaporate roughly 5 gallons per minute on an annual basis (with no added benefit from the black plastic liner).

4) We will plan and bond (\$100,000) for the pond to subsequently be converted to a bio-remediation area to remediate either cyanide or other metals if necessary. The technology for bio-remediation has been used and is well documented but is best suited to site conditions and resulting chemistry. Due to the odd nature of the regional ground water used for make-up water, modeling the drain down solutions at this point would not produce an accurate product. The 3500 TDS ground water with the high amount of salts could be used by itself as cyanide killer if needed. Three reference for bio-remediation are attached but we will use the best available technology at the time of closure.

5) It would be our preference to work with the state on timing of the final reclamation which would include dozing and re-vegetating the pond walls-- only to the extent it is needed to hide and cover any remaining plastic.

6) Finally and only with permission from the State, the pond bottom liner should be ripped to allow the accumulating solutions to pass into the ground-- Likely not for about 5-6 years.

#### Solution Monitor Plan--

During closure, solutions flows will be monitored and solutions will be sampled, analyzed, and reported quarterly.

A Commercial Lab will be used to test for: True Color  
pH  
Bicarbonate  
Carbonate



Hydroxide  
Total Alkalinity  
Chloride  
Fluoride  
Sulfate  
Total Nitrogen  
TDS  
Turbidity  
Metals: Antimony  
Arsenic  
Barium  
Beryllium  
Cadmium  
Chromium  
Copper  
Lead  
Mercury  
Selenium  
Silver  
Thallium  
Zinc

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